

## 2.4 Use Postulates and Diagrams

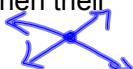
Postulate 5--through any 2 points, there exists exactly one line



Postulate 6--A line contains at least 2 points

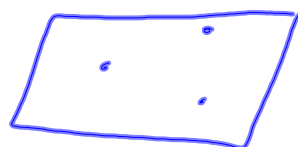
(Converse of 5)

Postulate 7--If 2 lines intersect, then their intersection is exactly one point



Postulate 8--Through any 3 noncollinear points there exists exactly one plane

Postulate 9--A plane contains at least 3 noncollinear points



Postulate 10--If 2 points lie in a plane, then the line containing them lies in that plane

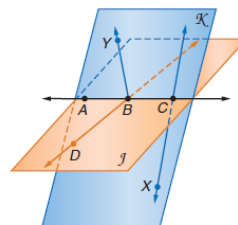


Postulate 11--If 2 planes intersect, then their intersection is a line



In the figure at the right,  $\overline{AC}$  and  $\overline{BD}$  lie in plane  $J$ , and  $\overline{BY}$  and  $\overline{CX}$  lie in plane  $K$ . State the postulate that can be used to show each statement is true.

1.  $C$  and  $D$  are collinear.
2.  $\overline{XB}$  lies in plane  $K$ .
3. Points  $A$ ,  $C$ , and  $X$  are coplanar.
4.  $\overline{AD}$  lies in plane  $J$ .
5.  $X$  and  $Y$  are collinear.
6. Points  $Y$ ,  $D$ , and  $C$  are coplanar.






Determine whether the following statements are *always*, *sometimes*, or *never* true. Explain.

- Three points determine a plane.
- Points  $G$  and  $H$  are in plane  $X$ . Any point collinear with  $G$  and  $H$  is in plane  $X$ .
- The intersection of two planes can be a point.
- Points  $S$ ,  $T$ , and  $U$  determine three lines.
- Points  $A$  and  $B$  lie in at least one plane.
- If line  $\ell$  lies in plane  $P$  and line  $m$  lies in plane  $Q$ , then lines  $\ell$  and  $m$  lie in plane  $R$ .

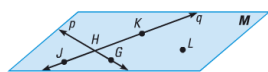
HW  
p99-100  
#s 3, 4, 6-8, 10, 14-23

**IDENTIFYING POSTULATES** State the postulate illustrated by the diagram.

3. **If**  **then** 
4. **If**  **then** 

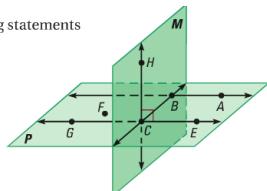
**USING A DIAGRAM** Use the diagram to write an example of each postulate.

- Postulate 6
- Postulate 7
- Postulate 8



10. ★ **MULTIPLE CHOICE** Which of the following statements *cannot* be assumed from the diagram?

- Points  $A$ ,  $B$ ,  $C$ , and  $E$  are coplanar.
- Points  $F$ ,  $B$ , and  $G$  are collinear.
- $\vec{HC} \perp \vec{GE}$
- $\vec{EC}$  intersects plane  $M$  at point  $C$ .



**USING A DIAGRAM** Use the diagram to determine if the statement is *true* or *false*.

- Planes  $W$  and  $X$  intersect at  $\vec{KL}$ .
- Points  $Q$ ,  $J$ , and  $M$  are collinear.
- Points  $K$ ,  $L$ ,  $M$ , and  $R$  are coplanar.
- $\vec{MN}$  and  $\vec{RP}$  intersect.
- $\vec{RP} \perp$  plane  $W$
- $\vec{JK}$  lies in plane  $X$ .
- $\angle PLK$  is a right angle.
- $\angle NKL$  and  $\angle JKM$  are vertical angles.
- $\angle NKJ$  and  $\angle JKM$  are supplementary angles.
- $\angle JKM$  and  $\angle KLP$  are congruent angles.

